RATIONALE

General NPDES Permit for Discharges of Storm Water Runoff and Process Wastewater Associated with Ready Mixed Concrete Facilities

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1. Introduction

Facilities considered in this rationale are ready mix concrete plants located in the State of Tennessee which discharge either storm water runoff or process waste water, or both, to the waters of the State. These facilities mix concrete onsite from its constituents, also located on the facility site, for use at job sites located elsewhere. These constituents include cement, stone, various sands, and may include a variety of chemical additives which manipulate the physical properties of the concrete.

Vehicle cleaning and washing procedures result in the discharge of process waste water from the site to the waters of the State. Storm water runoff is also discharged from the ready mix concrete facility sites.

Water Resources laws require that discharges of such water into the waters of the State of Tennessee or of the United States be permitted by the Department of Environment and Conservation and that the quality of the discharged water meet standards set by the Department.

Over the last five years, the Division of Water Resources (division) has issued approximately 240 general NPDES permit coverages for storm water runoff and/or process waste water discharges associated with operations of ready mix concrete facilities to the waters of the State.

Because permit requirements for all ready mix concrete facilities are similar, and because of the number of facilities in operation, it is the opinion of the division that this category of sources would be controlled more appropriately under an NPDES general permit.

This rationale sheet describes and gives the basis for permit conditions to be applied statewide to these discharges of storm water and process wastewater associated with the operation of ready mix concrete facilities.

2. Background

During the operations at these facilities, dust from cement and other concrete constituents cover the concrete mixer trucks. These vehicles are washed down to remove this dust prior to leaving the site. At the end of each day, or after changes in the concrete mixture, the waste concrete must be dumped and the mixing barrel washed out to prevent the concrete from setting up inside the mixer. The number and size of trucks used at the facility, the amount of dust to be washed off the vehicles, the number of concrete or job changes requiring barrel washout, and the use, if any, of water recycling are variables which contribute to the quantity and quality of the process waste water at the sites.

Storm water will come into contact with stockpiles of raw material, process materials and equipment, and process waste waters prior to their discharge or runoff from facility sites. The quality and quantity of storm water runoff can be affected by topography and operational layout of the site, house keeping policies and the extent of storm events.

As such, these discharges generally require the same effluent limitations and monitoring requirements. Since the permit requirements for all these discharges are similar and because of the number of discharges, it is the opinion of the division that this category of sources is controlled more appropriately under a NPDES general permit rather than under individual permits. General NPDES permits are issued by the division in accordance with the Division's Rule 1200-4-10-.01 through .03.

3. Present Permit Conditions

The division issued General NPDES Permit for Discharges of Storm Water Runoff and Process Waste Water Associated with Ready Mix Concrete Facilities (TNG110000) on October 31, 2007. This general permit expires on October 31, 2012. The limits contained in this general permit are as follows:

Parameter	Monthly Average Concentration	Measurement Frequency	Sample Type
Process waste water effluent limitations			
Flow in MGD	-----	1/month	Totalized
Total Suspended Solids (TSS)	50 mg/L	1/month	Grab
pH	6.0 – 9.0	1/month	Grab
Storm water effluent limitations			
Chemical Oxygen Demand (COD)	Report	Annually	Grab
Total Suspended Solids (TSS)	Report	Annually	Grab
pH	Report	Annually	Grab
Total Recoverable Iron	Report	Annually	Grab

4. Permit Condition Technology

A. Technology-based effluent limitations

Under state and federal law and regulations, a discharge permit must establish limitations equivalent to best available technology (BAT) for toxic pollutants and best conventional pollutant control technology (BCT) for conventional pollutants. For some industry categories, such limitations have already been established by the Environmental Protection Agency (EPA). This is not the case with ready mix concrete facilities discharges; thus the Division will propose best professional judgment (BPJ) limits equivalent to BAT and BCT.

B. Water quality-based limitations

Permits must also contain any requirements, in addition to or more stringent than technology-based limits, necessary to achieve water quality standards or to control all pollutants which may be discharged at a level which will cause, have the reasonable potential to cause or contribute to an excursion above any state water quality standard, including narrative criteria.

5. Proposed effluent limits

A. Pollutants to be limited and standard technology

Given the potential contaminants, it is the opinion of the division that the minimum standard method for the treatment of the process waste water associated with the operation of ready mix concrete facilities is a filter or settling pond or basin, with additional natural or chemical treatment required to meet the effluent limitations set forth in this permit. The basin or pond acts as a collection point for process waste water (and potentially storm water runoff), and allows the waste water to be held for a sufficient period for the contaminants to be settled out, either naturally or artificially, as well as allowing any additionally required treatment to take place. The division believes that this treatment method is equivalent to BCT.

Since the previous permit, the division has been reviewing water quality in surface streams in Tennessee. The division has identified waters that do not meet water quality criteria, the parameter for which the waters do not meet the standards, and the source of the parameter. The division has identified siltation as a parameter that causes impairment. The division proposes to require recycle systems for process wastewater where discharges of process wastewater would enter impaired streams.

The division has also identified waters that are of exceptional water quality. The division proposes to require recycle systems for process wastewater where discharges of process wastewater would enter high quality waters to prevent degradation of the receiving waters.

The division proposes limiting the following parameters for process waste water discharges: Total Suspended Solids (TSS) and pH. Suspended solids are of concern because concrete is a mixture of particles in water. Limitations for pH are needed since

the components within cement mixtures are basic and will result in elevated pH of discharges.

B. Proposed limits for each parameter

Discussed below is the division's rationale for limitations for each parameter. In determining the proposed limit or monitoring concentration for discharges, the division first considers the BPJ-BAT or BPJ-BCT based treatment capability, then the water quality-based criteria. The chosen proposed limit is the most conservative limit required to protect receiving streams.

i. Proposed limits for process waste water discharges

Total Suspended Solids

The division reviewed the monitoring data for the previous general permit and observed that the average value for total suspended solids was 49 mg/L (not counting values reported as "below detection limit"). The division determined that the existing limit of 50 mg/L daily maximum is appropriate. This limitation will be retained in the proposed general permit.

In addition, the following standard permit condition, which is based on Tennessee narrative water quality criteria, will apply, "there shall be no distinctly visible floating scum, oil or other matter contained on or in the waste water discharge."

pH

The division believes the proposed range of 6.0 – 9.0 standard units will provide protection of the state's waters per Rule 1200-4-3 General Water Quality Critique.

Iron

The division reviewed the monitoring data for the previous general permit and observed that the average value for iron (total) during the last permit was 0.8 mg/L. The division proposes to maintain the effluent limit of 5.0 mg/L.

ii. Proposed monitoring requirements for discharges of storm water

The division proposes monitoring the following parameters for discharges of storm water runoff: Total Suspended Solids (TSS), iron and pH. These items represent the major concern parameters of EPA's multi-sector permit for storm water discharges for storm water discharges associated with industrial activity, with respect to the ready mix concrete industry. The pH, iron and TSS are of concern in storm water runoff because a number of the raw materials at ready mix facilities are stored outside and are exposed to storm water. Chemical Oxygen Demand (COD) was included in the previous permit, but the data submitted in the interim indicates low levels detected in the stormwater runoff. Therefore, the division proposes that COD be removed as a parameter to be monitored in the stormwater runoff. Iron was included as a parameter to be monitored because slag, a by-product of steel manufacturing, is added to a number of concrete blends. In addition, the following standard permit conditions, which are based on Tennessee narrative water

quality criteria, will apply, "there shall be no distinctly visible floating scum, oil or other matter contained on or in the waste water discharge. The frequency of monitoring the storm water discharge is at least once per year. The benchmarks for these parameters are:

Parameter	Benchmark
Total Suspended Solids (TSS)	150 mg/L
pH	5.0-9.0 (Range)
Total Recoverable Iron	5 mg/L

C. Proposed monitoring and reporting requirements

Measurement frequency for all process waste water parameters will be changed from once per month to once per quarter. Again, based on the frequency of reported process water discharges and reported effluent characteristics, it is our conclusion that reduction of monitoring frequency is justified. The division believes proposed frequencies are necessary and adequate to characterize discharges and to determine compliance with permit limits.

Reporting of results for process waste water will be required once per quarter. The results will be submitted using the appropriate Discharge Monitoring Reports (DMR) form supplied by the Division of Water Resources. The results will be submitted to the Division of Water Resources.

Monitoring frequency for storm water runoff will be once per year.

Reporting of results for storm water runoff monitoring will be required at the end of each monitoring year. The permittee shall submit a summation of the monitoring results to the division. When the monitoring results exceed the bench mark of any parameter, the permittee must inform the division's local Environmental Field Office (EFO) in writing, within 30 days from the time storm water monitoring results were received, describing the likely cause of the exceedance(s). Furthermore, within 60 days from the time storm water monitoring results were received, the facility must:

- review its SWPPP, make any modifications or additions to the SWPPP which would assist in reducing specific effluent concentrations which are equal to less than the benchmarks for that facility, and
- submit to the division's local EFO a brief summary of the proposed SWPPP modifications (including a timetable for implementation).

B. Other conditions

Washout sites

Typically, concrete trucks must be washed out to keep the concrete from hardening in the mixing drum. Washout may occur at the job site, at the plant site, or at some other site. Such washout often has the potential of running into waters of the State and the division has, over the years, seen this happen. We are, therefore, requiring that concrete plants notify the division of its "remote" washout sites. These must also be approved by the division. The NOI form contains space for this information.

Signs

Permittees will be required to post a sign at the process waste water outfall that serves to notify the public of the nature of the discharge and that the discharge is regulated by the Division of Water Resources.

Standard conditions

Numerous standard NPDES permit conditions will be incorporated in the general permit, as required by EPA regulations. Standard requirements regard duty to comply, renotification, proper operation and maintenance, signatory requirements, etc..

6. Summary of Proposed Changes

- Process wastewater that has been combined with stormwater runoff may be discharged. However, discharges of this type will not be referred to "mixed outfall" discharges, but as process wastewater discharges.

- Clarification was made that recycle facilities are not required to have an extra pump available at all times at the site. Instead, the permittees should make provisions for a back-up pump (such as a spare or available rental) to be available to address any mechanical problem with the primary pump.

- All discharges from non-discharging (recycle) treatment systems must be monitored according to Parts 4 and 5 of this permit, like all other process water discharges.

- Permit coverage for new or expanded discharges of a pollutant of concern to Exceptional or Impaired/ Unavailable Conditions waters are available only under the non-discharging (recycle) option described in Section 1.2.3.

- Deadlines for submittal of a Notice of Intent (NOI) were clarified in sub-part 3.2.

- The division encourages the submission of signed and scanned NOIs and supporting documentation via email.

- Monitoring frequency for all process water parameters has been reduced from once per month to once per quarter.

- Perjury language was added to the certification statement(s).

7. General Permit Issuance Procedures

This general permit is drafted in accordance with applicable NPDES regulations (40 CDR 122, 123, 124 and 125), the Tennessee Water Quality Control Act (§ 69-3-101 et seq.), and the Department's permit issuance regulations (Rules of the Department 1200-4-1-.05 and 1200-4-10.01 through .03).

8. Permit Issuance and Public Notice Procedures

This general permit is drafted in accordance with applicable NPDES regulations (40 CFR 122, 123, 124, and 125), the Tennessee Water Quality Control Act (T.C.A. § 69-3-101, et.seq.), and the TDEC's permit issuance regulations in TN Rule 1200-4-05.

The applicable regulations for issuance of this general permit are found in 40 CFR 122.28 and 123.44, and the regulations for fact sheet requirements are found in 40 CFR 124.8 and 124.56.

The division will publish notice of its intent to issue the Ready Mixed Concrete General NPDES Permit and notice of a public hearing to receive comments on the draft permit. At least 30 days notice will be given for the public hearings. Comments will be received at least 10 ten days after the last hearing. Any interested person may request copies of the rationale (fact sheet) and draft permit and submit written comments on the draft permit.

The division will hold a public hearing on Monday, October 15, 2012, in the 17th Floor Conference Room of the L&C Tower at 401 Church Street in Nashville, Tennessee. The hearing will begin at 6 PM CDT.

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